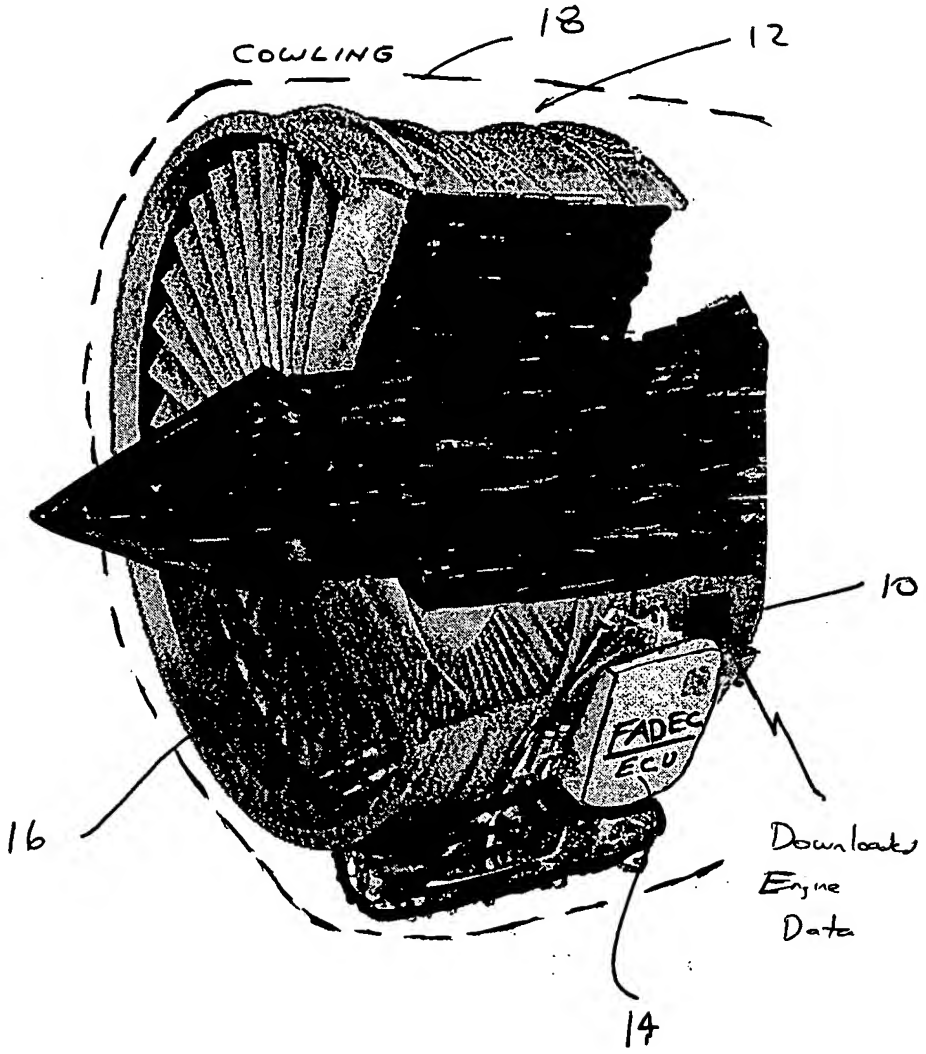
BEST AVAILABLE COPY



F. G. 1

BEST AVAILABLE COPY

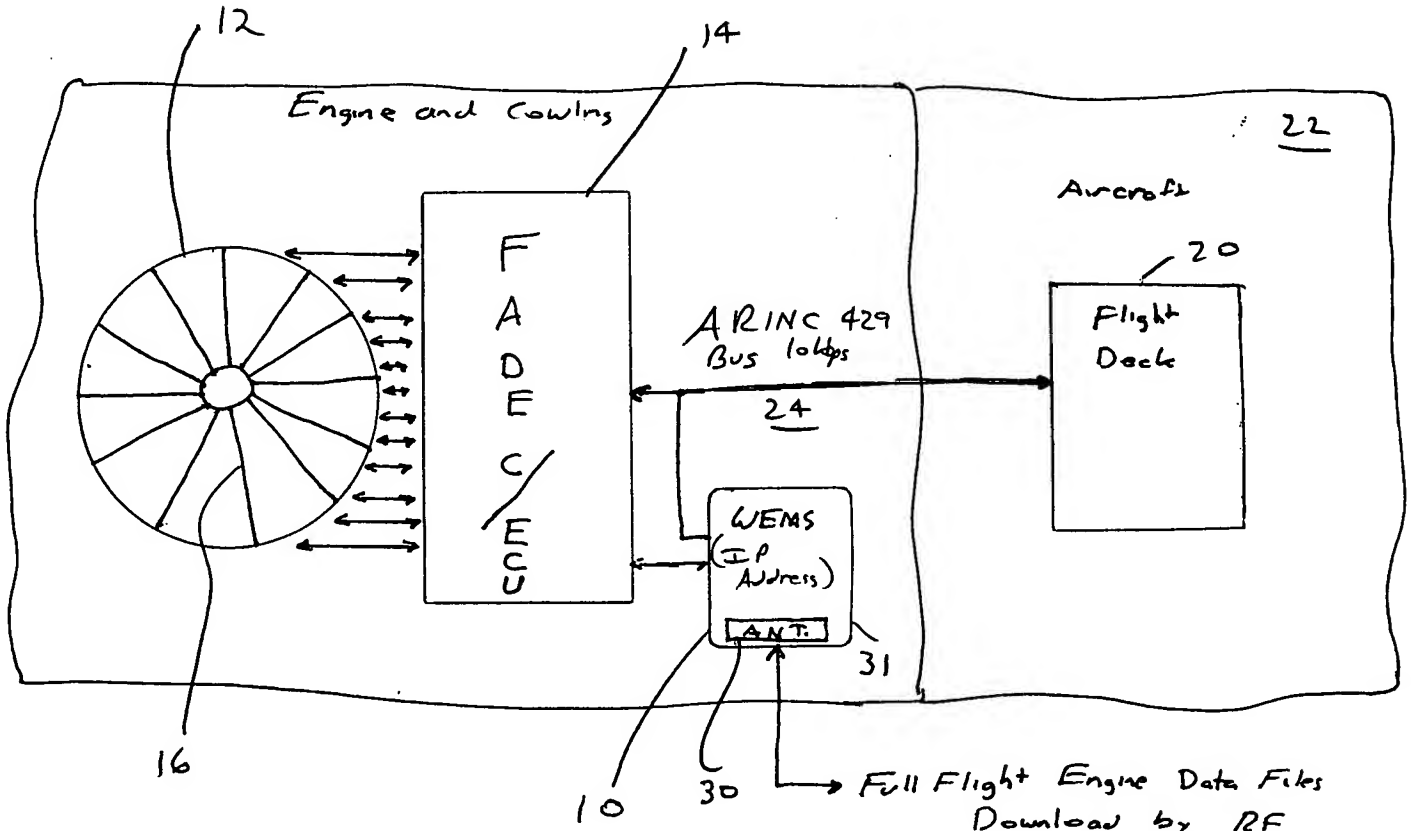

12
14
Engine and Cowling
22
Aircraft
20
FADEC/ECU
ARINC 429
Bus 10kbps
24
Flight Deck
WEMS
(IP Address)
ANT.
31
16
10
30
Full Flight Engine Data Files
Download by RF
802.11 / SS
Cellular
Upload Algorithms
other data
IP Addressable

FIG. 2

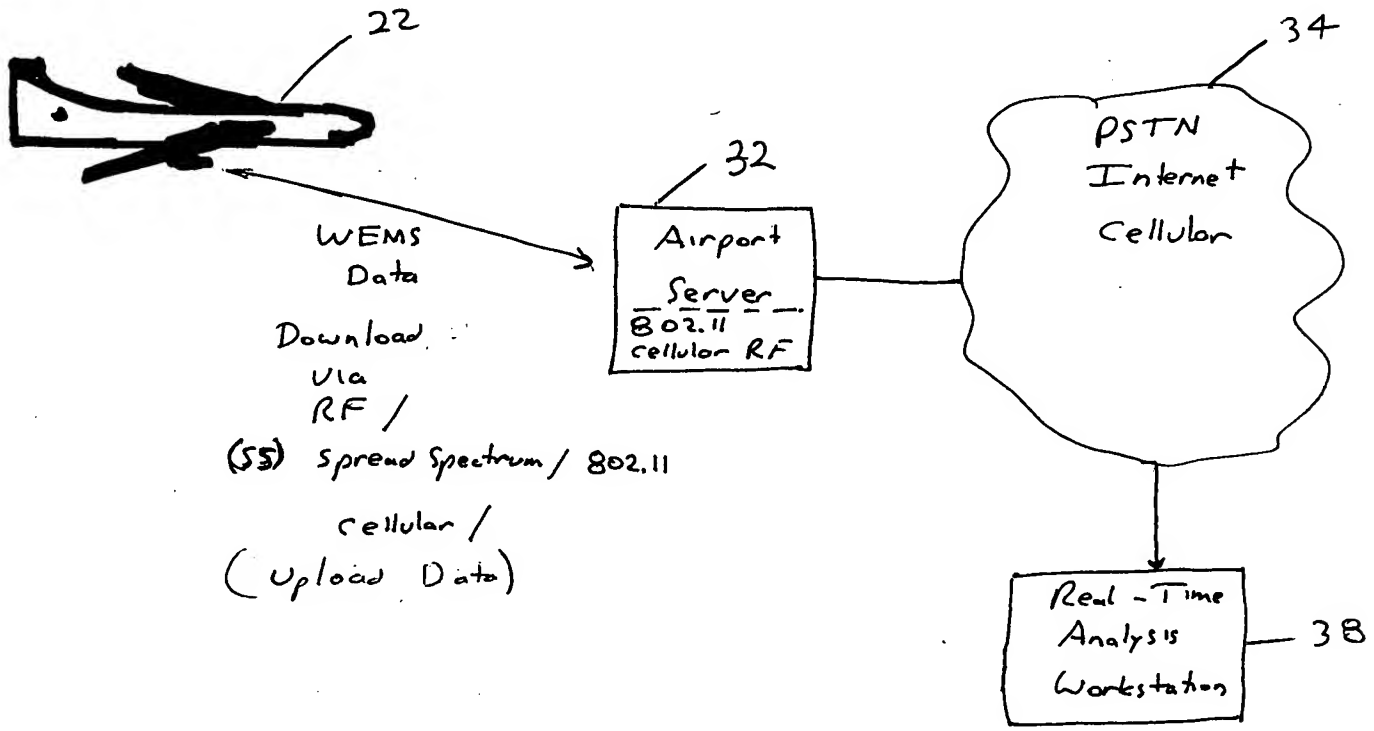

22
34
PSTN
Internet
Cellular
32
Airport
Server
802.11
cellular RF
WEMS
Data
Download
via
RF /
(55) Spread Spectrum / 802.11
cellular /
(Upload Data)
Real-Time
Analysis
Workstation
38

FIG. 3

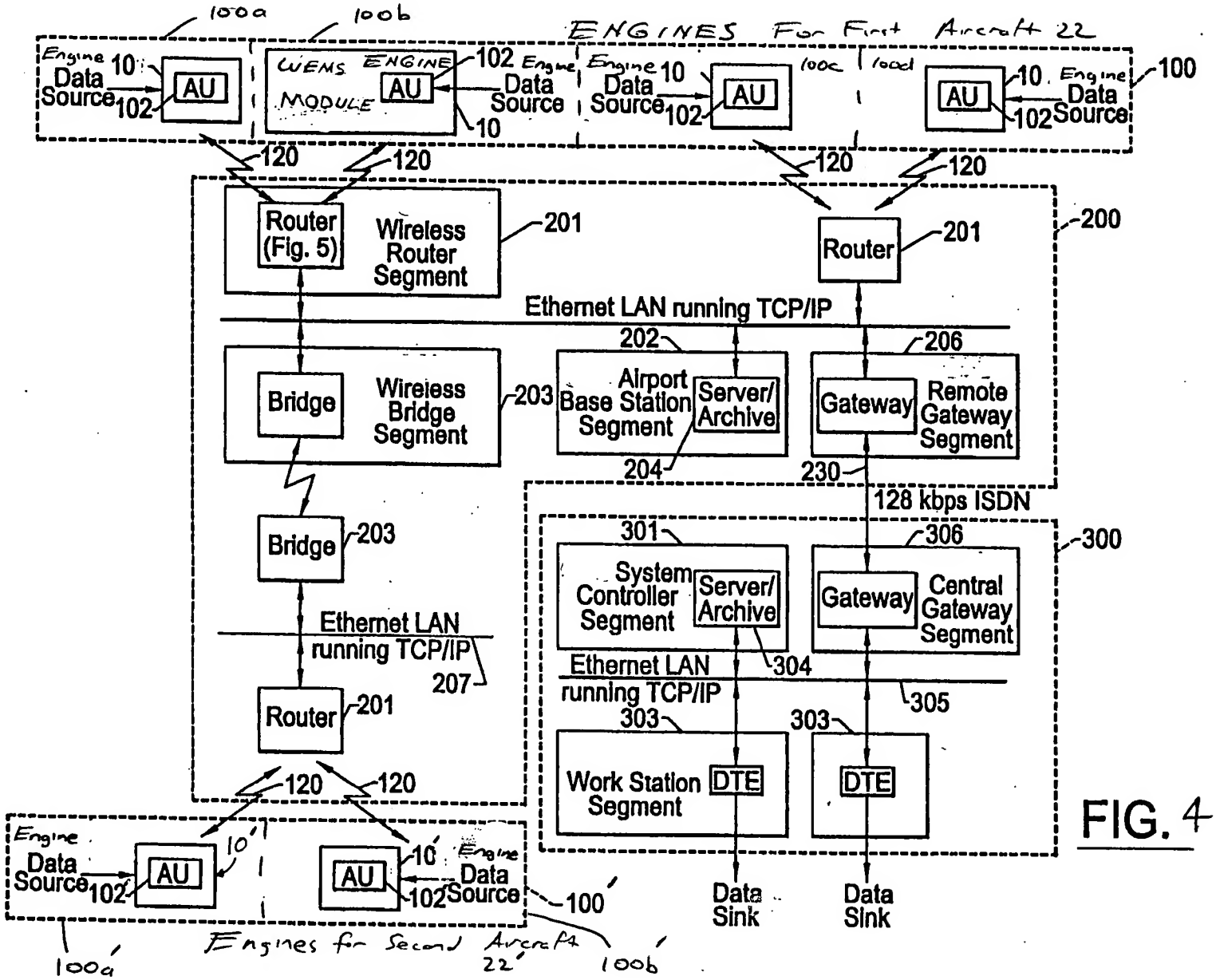

100a
100b
ENGINES For First Aircraft 22
Engine Data Source
10
102
AU
WEMS ENGINE MODULE
100c
100d
100
120
Router (Fig. 5)
Wireless Router Segment
201
Router
200
Ethernet LAN running TCP/IP
202
206
Bridge
Wireless Bridge Segment
203
Airport Base Station Segment
Server/ Archive
204
Gateway
Remote Gateway Segment
230
128 kbps ISDN
301
306
300
System Controller Segment
Central Gateway Segment
304
305
303
Work Station Segment
DTE
Data Sink
Ethernet LAN running TCP/IP
207
10'
100'
Engines for Second Aircraft
22'

FIG. 4

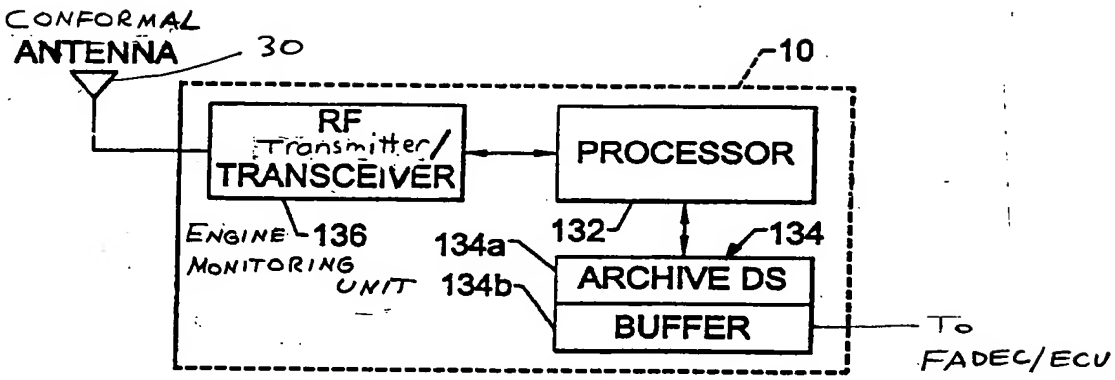

CONFORMAL
ANTENNA
30
10
RF
Transmitter/
TRANSCEIVER
PROCESSOR
ENGINE
MONITORING
UNIT
136
132
134
134a
134b
ARCHIVE DS
BUFFER
To
FADEC/ECU

FIG. 5

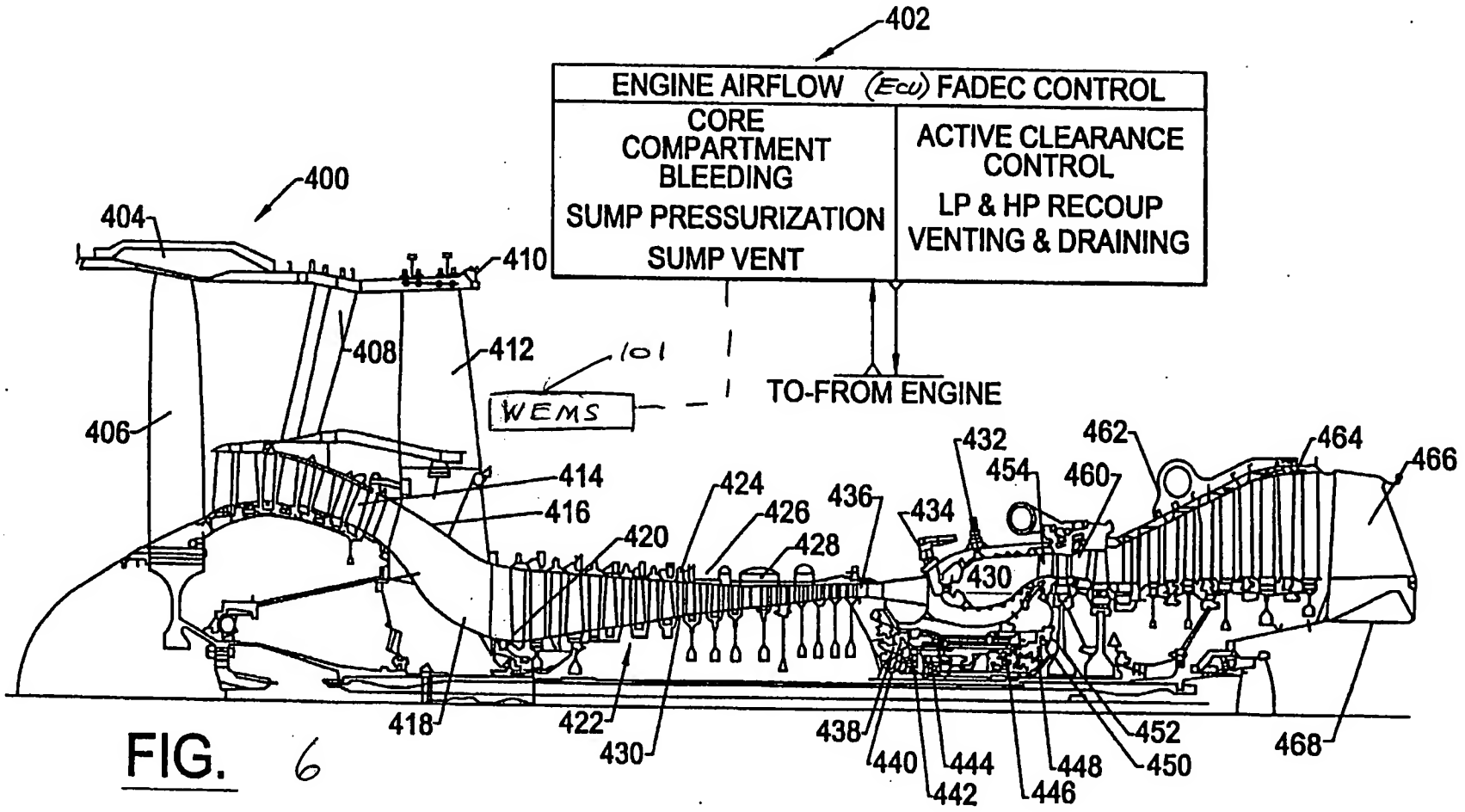

402
ENGINE AIRFLOW (ECU) FADEC CONTROL
CORE COMPARTMENT BLEEDING
SUMP PRESSURIZATION
SUMP VENT
ACTIVE CLEARANCE CONTROL
LP & HP RECOUP VENTING & DRAINING
400
404
410
408
412
101
WEMS
TO-FROM ENGINE
406
414
416
420
424
426
428
436
434
432
454
460
462
464
466
430
418
422
430
438
440
442
444
446
448
450
452
468

FIG. 6

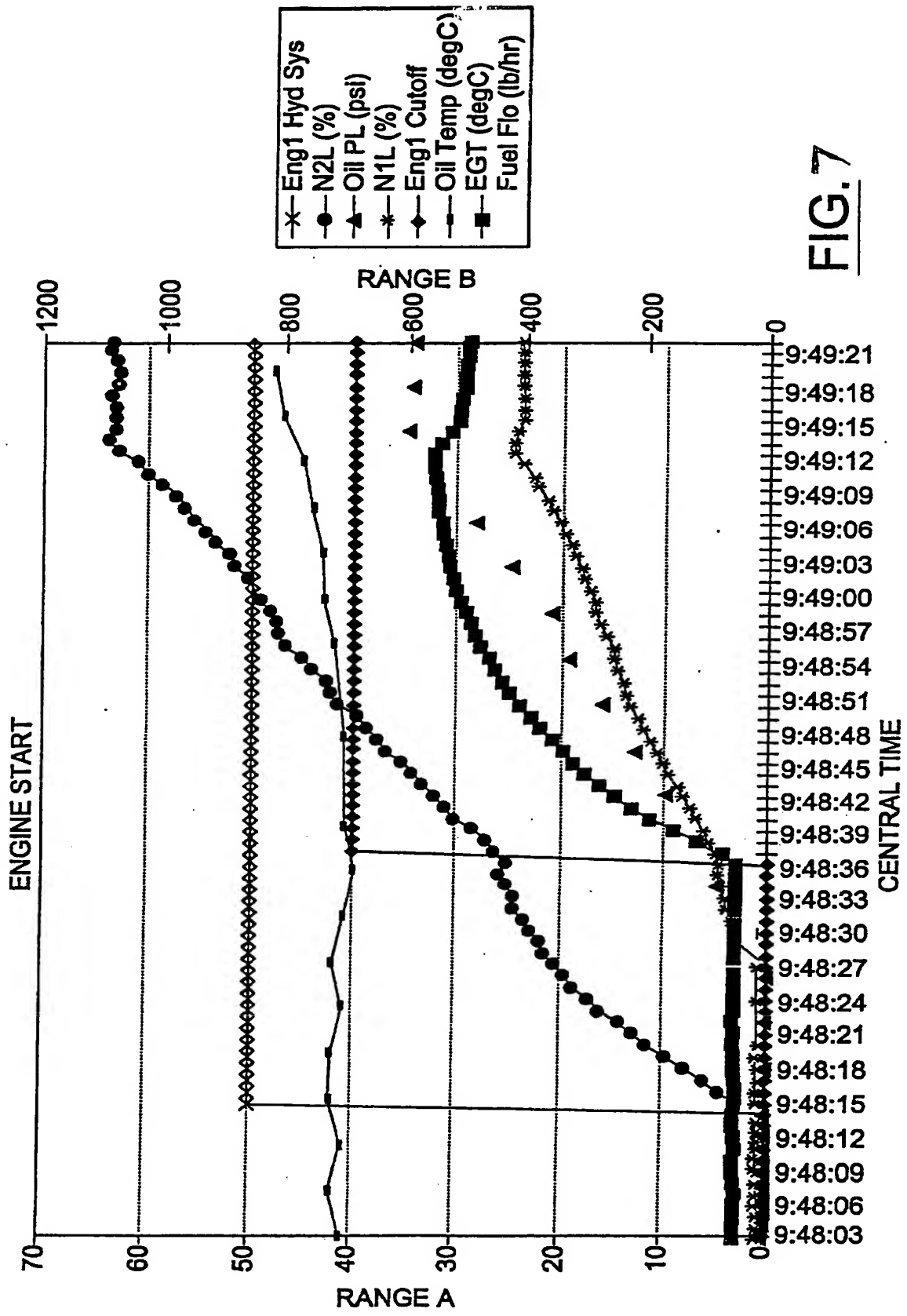

Eng1 Hyd Sys
N2L (%)
Oil PL (psi)
N1L (%)
Eng1 Cutoff
Oil Temp (degC)
EGT (degC)
Fuel Flo (lb/hr)
RANGE B
1200
1000
800
600
400
200
0
ENGINE START
CENTRAL TIME
9:49:21
9:49:18
9:49:15
9:49:12
9:49:09
9:49:06
9:49:03
9:49:00
9:48:57
9:48:54
9:48:51
9:48:48
9:48:45
9:48:42
9:48:39
9:48:36
9:48:33
9:48:30
9:48:27
9:48:24
9:48:21
9:48:18
9:48:15
9:48:12
9:48:09
9:48:06
9:48:03
70
60
50
40
30
20
10
0
RANGE A

FIG. 7